

In the Claims

Claims 1-47 recite:

1. (Previously presented) A method of managing cacheable streaming content, the method comprising:
 - a) serving a content stream to a mobile node in a first subnet with a first caching proxy in response to a request;
 - b) in response to the mobile node relocating to a second subnet, handing off the request to serve the streaming content from the first caching proxy to a second caching proxy; and
 - c) continuing to serve the request for the content stream to the mobile node with the second caching proxy.
2. (Previously presented) The method of claim 1, wherein b) comprises the initial act of notifying the first caching proxy of the relocation of the mobile node.
3. (Previously presented) The method of claim 1, wherein b) comprises identifying the second caching proxy with the first caching proxy as a function of the location of mobile node in the second subnet.
4. (Previously presented) The method of claim 1, wherein b) comprises initiating a cache query to identify the second caching proxy.
5. (Previously presented) The method of claim 1, wherein b) comprises initiating the handoff with the first caching proxy.

6. (Original) A method of managing cacheable streaming content, the method comprising:

- a) supplying a content stream with a caching proxy in response to a request of a mobile node located in a first subnet;
- b) caching the content stream supplied by the caching proxy;
- c) handing off the request to another caching proxy when the mobile node relocates to a second subnet;
- d) discontinuing caching of the content stream with the caching proxy; and
- e) quantizing the fragment of the content stream cached in the caching proxy to achieve a uniform size.

7. (Original) The method of claim 6, wherein c) comprises at least one of:

- discarding some of the fragment;
- pre-fetching an additional part of the content stream for addition to the fragment;
- and
- leaving the fragment unchanged.

8. (Original) The method of claim 6, wherein e) comprises modifying the size of the fragment to equal a multiple of a quanta.

9. (Original) The method of claim 6, further comprising f) coordinating further utilization of the quantized fragment with another quantized fragment randomly cached in at least one other caching proxy.

10. (Original) The method of claim 6, further comprising t) communicating a uniform resource identifier (URI) and at least one quanta identifier representative of the quantized fragment to at least one of a master cache and other caching proxies.

11. (Original) The method of claim 6, wherein the quantized fragment comprises at least one quanta and the method further comprises f) selectively allowing duplicate quanta to be randomly cached in other caching proxies.

12. (Original) The method of claim 6, further comprising f) storing a uniform resource identifier (URI) and at least one quanta identifier representative of the quantized fragment in a cache digest.

13. (Original) The method of claim 6, further comprising

f) ranking the fragment as a function of operational statistics; and

g) controlling the degree of duplicate fragments as a function of the ranking.

14. (Original) A method of managing cacheable streaming content, the method comprising:

a) subscribing a caching proxy to a mobility status of a mobile node as a function of a request for a content stream by the mobile node and the logical proximity of the caching proxy to the location of the mobile node;

b) notifying the caching proxy that the mobile node has moved to a new location;

c) identifying a target caching proxy in close logical proximity to the new location;

d) initiating a cache handoff of the request for the content stream from the caching proxy to the target caching proxy; and

e) subscribing the target caching proxy to the mobility status of the mobile node.

15. (Original) The method of claim 14, wherein a) comprises submitting credentials of the caching proxy and the identity of the mobile node to a home agent.

16. (Original) The method of claim 14, wherein a) comprises submitting credentials of the caching proxy and the identity of the mobile node to a mobility status subscription server.

17. (Original) The method of claim 14, wherein b) comprises notifying the caching proxy of the new location of the mobile node, and c) comprises initiating a cache query with the caching proxy to identify the target caching proxy.

18. (Original) The method of claim 14, wherein d) comprises communicating credentials and details of the request for the content stream to the target caching proxy.

19. (Original) The method of claim 14, wherein e) comprises:

confirming success of the cache handoff; and

suspending further transmission of the content stream from the caching proxy.

20. (Original) The method of claim 14, wherein a) and b) are performed with a session initiation protocol (SIP).

21. (Original) The method of claim 14, wherein communication with the mobile node is performed with mobile Internet Protocol (IP).

22. (Original) A cache handoff system for managing cacheable streaming content requested by a mobile node within a network architecture comprising a first subnet and a second subnet, the cache handoff system comprising:

a first caching proxy operable in the first subnet to supply a content stream responsive to a request of a mobile node operable in the first subnet; and

a second caching proxy operable in the second subnet, the first caching proxy operable to initiate a cache handoff of the request to the second caching proxy following relocation of the mobile node to the second subnet, the second caching proxy operable to seamlessly continue supply of the requested content stream as a function of the cache handoff.

23. (Original) The cache handoff system of claim 22, further comprising a mobility status subscription server operable in the network architecture, the mobility status subscription server operable to subscribe one of the first caching proxy and the second caching proxy to a mobility status of the mobile node as a function of the supply of the content stream.

24. (Original) The cache handoff system of claim 22, wherein at least one of the first and second caching proxies are operable to discover a home agent of the mobile node.

25. (Original) The cache handoff system of claim 22, wherein the first caching proxy is operable to select the second caching proxy to receive the cache handoff based on the location of the mobile node.

26. (Original) The cache handoff system of claim 22, wherein the mobile node is operable to direct the cache handoff between the first and second cache proxies.

27. (Original) The cache handoff system of claim 22, wherein the mobile node is operable to initiate a cache query to identify the second caching proxy in the second subnet.

28. (Original) The cache handoff system of claim 22, wherein the first caching proxy is operable to discontinue supply of the requested content stream when the cache handoff is successful.

29. (Original) The cache handoff system of claim 28, wherein the first caching proxy is operable to cache the fragment of the content stream supplied prior to discontinuing supply of the content stream, the fragment quantized to form at least one quanta.

30. (Original) The cache handoff system of claim 22, further comprising a master cache operable to coordinate operation of the first and second caching proxies, the first and second caching proxies operable to communicate identity of streaming content randomly cached therein to the master cache.

31. (Previously presented) In a cache handoff system for managing cacheable streaming content requested by a mobile node within a computer network, a caching proxy serving a first portion of the computer network comprising:

a streaming content server operable to supply a content stream to the mobile node in the computer network; and

a request monitor operable (a) to receive the request from the mobile node to initiate the supply of the content stream; (b) following the mobile node relocating from

the first portion of the computer network to a second portion of the computer network, to initiate a cache handoff to a second caching proxy serving the second portion of the computer network to allow the second caching proxy to continue the supply of the content stream to the mobile node; and (c) following the mobile node relocating from the second portion of the computer network to the first portion of the computer network, to receive a cache handoff from the second proxy, so as to continue a supply of a content stream then served from the second caching proxy.

32. (Previously presented) A caching proxy as in Claim 31, wherein the first portion of the computer network and the second portion of the computer network comprise a first subnet and a second subnet.

33. (Previously presented) A caching proxy as in Claim 31, wherein the cache proxy subscribes to a service provided by a mobility agent which tracks the network location of the mobile node.

34. (Previously presented) A caching proxy as in Claim 33, wherein the mobility agent provides to cache proxy a mobility status of the mobile node as a function of the supply of the content stream.

35. (Previously presented) The caching proxy as in Claim 31, operable to discover a home agent of the mobile node.

36. (Previously presented) The caching proxy as in Claim 31, wherein the request monitor is further operable to select the second caching proxy based on the location of the mobile node.

37. (Previously presented) The caching proxy as in Claim 31, wherein the request

monitor receives directions from the mobile node to perform the cache handoff.

38. (Previously presented) The caching proxy as in Claim 31, wherein the request monitor responds to a cache query by identify the portion of the computer network served by the cache proxy.

39. (Previously presented) The caching proxy of Claim 31, wherein the request monitor is further operable to discontinue the supply of the content stream from the streaming content server when the cache handoff to the second caching proxy is successful.

40. (Previously presented) The caching proxy as in Claim 31, wherein the streaming content server caches a fragment of the content stream supplied, the fragment quantized to form at least one quantum.

41. (Previously presented) The caching proxy as in Claim 31, wherein the cache proxy cooperates with a master cache which operates to coordinate operations of the caching proxy and the second caching proxy to provide the content stream.

42. (Previously presented) The caching proxy of Claim 40, wherein the fragment of the content stream is quantized to quanta of a predetermined size.

43. (Previously presented) The caching proxy of Claim 40 wherein, to supply the content stream, the streaming content server is operable to perform one or more of: discarding some of the cached fragment, pre-fetching an additional part of the content stream for addition to the cached fragment; and leaving the cached fragment unchanged.

44. (Previously presented) The caching proxy of Claim 40, wherein the caching proxy cooperates with the second proxy to provide the content stream, the caching proxy

providing a uniform resource identifier (URI) and one or more quantum identifiers representative of the cached fragment..

45. (Previously presented) The caching proxy of Claim 40, wherein the caching proxy cooperates with a master cache which operates to coordinate operations of the caching proxy and the second caching proxy to provide the content stream, the caching proxy providing the master cache a uniform resource identifier (URI) and one or more quantum identifiers representative of the cached fragment..

46. (Previously presented) The caching proxy of Claim 45, wherein the master cache causing the caching proxy and the second proxy to both cache selective quanta of the content stream.

47. (Previously presented) The caching proxy of Claim 40, wherein the streaming content server caused to be stored in a cache digest a uniform resource identifier (URI) and one or more quantum identifiers representative of the quantized fragment.